# Geology as an Ecological factor in the Distribution of an insect
## The Fly *Symphoromyia immaculata* F. (Dipt. Rhagionidae)

By Alan E. Stubbs

Geology is an easily ignored aspect of the distribution of an insect.

For appreciation of distribution reliance has been placed in the past on building up county lists which often become meaningless lists of records for each county. If localities are given these are often too vague. The neighbourhood of a town, or a single common, may include a wide range of habitats so that records may be meaningful only to those who know the area. However, one gathers the general pattern of distribution and one may speak of continental or northern distribution.

It is amazing how little information is recorded on the habitat of insect species, but usually this information is condensed to 'woodland' or 'grassland'. Occasionally these descriptive terms become a little more meaningful, such as 'heathland', suggesting a sandy soil, or 'chalk grassland', but this is usually the nearest one gets to geological consideration. Though many entomologists are chiefly interested in amassing a collection, it is surprising that more notice is not taken of ecology, since a knowledge of the ecological requirements of a species will streamline the search for it. Ecology tends to be regarded as 'the feel' of a locality and the experience of a lifetimes's collecting. Useful information on habitat is often omitted in print, so it becomes difficult to draw upon other's experience and to use fully their records. True a balance must be met with the time available for recording and one often is not aware of what one should have noted in the field until after the event. In looking for common denominators between localities, geology can be particularly useful, and generally need not be recorded in the field since maps are available for study. Entomologists generally lag in this field, whereas botanists for years have recognised the relationship between geology, soil and vegetation. The best use entomologists make of this situation is in the pursuit of phytophagous insects feeding on plants of local distribution. Any wider suggestion that geology and soil may be a valid consideration in distribution is usually frowned upon as unlikely. This attitude is often an excuse for not looking into the matter and because in chasing the prized insects it is easy to ignore the geology out of sight beneath one's feet.

This paper has its origin in the discovery of a small dark grey fly obtained by sweeping at three localities. Its behaviour and perky appearance at once suggested that it was a member of the family Rhagionidae and it was readily identified as *Symphoromyia immaculata* F. which Verrall in 1909 described as 'very little known as a British species' (*British Flies* vol. iv). A few further records were gathered from Verrall and the British Museum Collection and it was striking that these localities were in chalky districts as were my own. It seemed that this rare species may be localised by a preference for calcareous districts so records were gathered from as many sources as possible to see if this hypothesis was

tenable The hypothesis, as a preference but not a restriction, is supported by the evidence which is set out below, and seems a good example on which to base discussion on geological aspects of distribution.

Geology is taken as the central theme of the many possible interdependant ecological factors affecting the distribution of an insect, since it should be regarded as the starting point in describing any habitat—the start of the sequence geology—soil—vegetation. The available recorded information is scanty and it may be argued that much has been read into a little evidence. On the other hand, dipterists cannot hope to have adequate records on a national scale for common, let alone rare species. In any case, observations of where a species lives should be used as a stepping stone to answering the more interesting and important questions of why and how. The suggestions made are only provisional but, as a discussion it may act as a background in future study of the species and may be found useful in stimulating an awareness of geology as a valid consideration in the distribution of an insect.

*(to be continued)*

# Current Literature

**The Larvae and Pupae of the British Cylindrotominae and Limoniinae (Diptera, Tipulidae). By A. Brindle.**
1967. *Trans. Soc. Brit. Ent.*, **17**: 151-216.

At least since 1955 the author has been searching for diptera larvae and pupae especially of the Tipulidae. The present paper is partly the result of his studies in the field and laboratory and partly on his search through relevant literature. The 173 figures are so useful when descriptions have to be abbreviated in these days of high printing costs. In his introduction he states his aim to provide a practical key for the non-specialist, choosing external characters adequate to separate genera and often species. His nomenclature follows Coe in the Royal Ent. Soc. Handbook series but with *Trichyphona* raised to generic rank and two species *claripennis* Verrall and *lucidipennis* Edwards transferred to *Dicranota* in accordance with the author's earlier paper in *Ent. mon. Mag.*, **98**: for 1962, but actually published in 1963. Under Methods, he describes his collecting, preservation and examination techniques. A general brief account of the characters of the tribes of the two sub-families under consideration follows. Then under Ecology he describes and discusses habitats (with a table of those used by each genus), mode of life and adaptations. The larval and pupal characters are described and then the major part of the work, the keys to the larvae and pupae of the subfamilies and 28 genera and where possible to known species, with illustrations and often an historical account of prior studies. Finally a check list of the genera, functioning also as an index to the figures and ending with a carefully selected list of 37 references. Actually one would be wise to consult his earlier papers for they include figures complementary to those in this latest paper.